

Abstracts

A73

terms in the treatment selection equation and the TED equation proved to be independent we re-estimated by univariate probit. Sensitivity analyses estimating the effect of olanzapine, risperidone and quetiapine independently versus TAP were also conducted. **RESULTS:** A Wald test of the correlation coefficient of the disturbances suggests that treatment selection is exogenous in our model ($\rho = -0.049$ ($p = 0.57$)) using a Huber-White sandwich estimator of the variance. The univariate probit parameter estimates of AAP are statistically significantly positive ($p = 0.044$) suggesting that AAP are associated with an increased risk of TED relative to TAP. The marginal effect of AAP is 0.0827; that is the TED propensity of AAP is 8.27% higher than that of TAP. A univariate probit model demonstrated that olanzapine ($p = 0.10$), quetiapine ($p = 0.10$) and risperidone ($p = 0.31$) were independently associated with an increased risk of TED, though not significantly. A bivariate probit model omitting prior comorbidity, drug use and quarterly dummy variables demonstrates selection bias ($\rho = -0.650$ ($p = 0.0029$)). **CONCLUSION:** The results of this study show that AAP are associated with an increased risk of TED relative to TAP. Evidence of unobserved selection bias was not present. Explanatory variables that may explain treatment selection that were included in our model were sufficient to control for choice of therapy.

PMH7

SUICIDALITY AND ANTIDEPRESSANTS USE IN CHILDREN AND ADOLESCENTS

Yuan Y¹, Carlson AM², Andis G³

¹University of Minnesota, Minneapolis, MN, USA, ²Data Intelligence Consultants, LLC, Eden Prairie, MN, USA, ³Medica Health Plans, Minnetonka, MN, USA

OBJECTIVES: The association between suicidality and antidepressant use has been reported in literature using clinical trial data. This study 1) investigates the relationship between suicidality and antidepressants use in children and adolescents using managed care claims data; 2) examines the effect of an FDA black box warning on antidepressant use in children and adolescents. **METHODS:** Subjects 5–19 years old, continuously enrolled in a large Midwestern IPA model health plan, diagnosed with depression (using ICD-9-CM codes) or issued at least one antidepressant prescription between January 1, 2004 and June 30, 2005 were included in the study. Descriptive statistics, paired samples t-test, Chi-Square test, and stepwise logistic regression were used to analyze the data. **RESULTS:** A total of 5104 subjects (7.2% continuously enrolled in 5–19 year olds) met the study criteria; 53% female; mean age was 15 years; 67% had depression diagnosis. Antidepressant use was modestly associated with suicidality using Chi-square test ($\chi^2 = 3.03$, $p = 0.08$; contingency odds ratio = 1.67). Logistic regression showed that antidepressant use is not a significant predictor to suicidality, while gender, depression diagnosis, other comorbid mental health, drug and alcohol abuse, and specialty provider were significant predictors to suicidality. While average days on antidepressant drug therapy decreased significantly ($p = 0.009$) after the black box warning, the number of inpatient stays for depression after the black box warning increased significantly ($p = 0.007$). **CONCLUSION:** From this claims database, the association between suicidality and antidepressant use in children and adolescents is not clear. Caution is needed in the use of antidepressants in this population. Increased inpatient stays following the black box warning may be an indication that providers are more aware of the suicidality risk or due to decreased use of antidepressants. It is important to balance appropriate usage and concerns for the safety of medications with the risk of adverse events and subsequent health service use.

MENTAL HEALTH—Cost Studies

PMH8

FORECASTING U.S. MEDICAID PROGRAM EXPENDITURE ON ANTIDEPRESSANT DRUGS

Ferrand YB, Kelton CM, Levy MS, Guo JJ

University of Cincinnati, Cincinnati, OH, USA

OBJECTIVES: Depression is the most prevalent major mental health disorder, affecting between eight and ten percent of the U.S. population. The U.S. Medicaid programs spent approximately \$2 billion on antidepressant drugs in 2005, across three categories of antidepressants including selective serotonin reuptake inhibitors, tricyclic antidepressants, and other antidepressants. Predicting future prices and utilization of antidepressants would facilitate Medicaid's planning process. Our objective is to build forecasting models that can be used to improve Medicaid's budgeting efforts. **METHODS:** We gather quarterly data (1991–2004, Centers for Medicare & Medicaid Services) on Medicaid national antidepressant expenditure. We use Box-Jenkins forecasting techniques on expenditure and utilization time series for specific antidepressants including Paxil, Prozac, Wellbutrin and Zoloft. Intervention analysis is used to determine the effects of patent expiration, new branded-drug entry, and new indication approval. Forecasts are computed and compared to a holdout sample, comprised of the 2005 data, to assess the performance of the models. **RESULTS:** The Box-Jenkins ARIMA algorithms for fitting and diagnosing the expenditure and utilization data resulted in four distinct non-stationary forecasting models. Final models were selected using standard information-based criteria. The Paxil and Prozac models incorporated an intervention term corresponding to patent expiration: a step function for Paxil and an exponential decay for Prozac. The best fitting model for Wellbutrin is a third order moving average in the first differences; the Zoloft model is a Random Walk. Maximum likelihood was used for estimations. Usual checks on the residuals proved to be satisfactory. **CONCLUSION:** ARIMA modeling can be used to capture the time series of individual antidepressant drugs purchased by Medicaid. Moreover, intervention analysis can be used to demonstrate the effect that generic entry has on the utilization of or expenditure on a branded medication. We find that the drugs studied are affected differently by this type of event.

PMH9

NET BENEFIT ANALYSIS OF DIVALPROEX SODIUM EXTENDED-RELEASE COMPARED TO VALPROIC ACID IN THE TREATMENT OF BIPOLAR DISORDER

Gupta SR¹, Schumock GT¹, Walton SM¹, Cramer JA²

¹University of Illinois at Chicago, Chicago, IL, USA, ²Yale University School of Medicine, West Haven, CT, USA

OBJECTIVES: To analyze, from a payer perspective, the net benefit of prescribing divalproex sodium extended-release (DVPX-ER) versus valproic acid (VPA) in patients who suffer from bipolar disorder. **METHODS:** The study used a decision analytic framework to compare the net benefit of DVPX-ER relative to VPA in the treatment of bipolar disease. The decision model incorporated on two primary outcomes: GI side effects, and treatment success. Levels of health service utilization and probability values were obtained from an expert panel comprised of 15 psychiatrists. Costs were obtained from an academic medical center. Two-way sensitivity analysis on the probability of GI events and the probability of disease control for VPA was used to provide further insight regarding the set of combinations of values in the model consistent with the decision to use VPA and DVPX-ER. **RESULTS:** The average probability of GI side

effects associated with VPA and DVPX-ER estimated by the expert panel was 0.36 and 0.10 respectively. The average probability of treatment success for VPA and DVPX-ER was estimated to be 0.45 and 0.58 respectively. In the base case analysis, the expected total cost per patient was \$33,525 and \$24,968 for VPA and DVPX-ER respectively, a difference of \$8557 favoring ER. The expert panel also estimated the frequency of drug switching within one year for VPA and DVPX-ER to be 58.3% and 28.7% for VPA and DVPX-ER respectively. Finally, sensitivity analysis results indicated DVPX-ER was the preferred option when the probability of disease control with VPA was 0.5 or less, across all GI event probabilities with VPA. **CONCLUSION:** The results from our decision analysis, based on probabilities of major events and associated utilization from an expert panel, suggest that divalproex sodium extended-release provides greater net benefit than valproic acid in the treatment of bipolar disorder.

PMH10

COST-EFFECTIVENESS ANALYSIS OF LONG ACTING MICROSPHERES OF RISPERIDONE (RISPERDAL CONSTA) IN THE TREATMENT OF SCHIZOPHRENIA IN MEXICO

Vazquez V

Janssen-Cilag, Mexico, Mexico, Mexico

OBJECTIVES: The aim of the study was to estimate the cost-effectiveness relation of the long-acting injection formulation of Risperidone (LARI) IM every 2 weeks vs oral antipsychotics Olanzapine and Risperidone and the traditional prolonged-action antipsychotic injection formulation of haloperidol depot in the pharmacological management of schizophrenia in Mexico. Consequently, a pharmacoeconomic study was proposed using a cost-effectiveness model in adult patients treated in the Mexican Social Security Institute (IMSS). **METHODS:** A decision analysis was developed using a retrospective and comparative cost-effectiveness model over a 24 month period. A sample of Schizophrenic patients was obtained using IMSS databases and a decision tree based on relapses, hospitalization, pharmacological treatment, hospital discharges and re-hospitalizations. To determine the criteria for the effectiveness of each alternative, a meta-analysis was carried out based on national and international literature taking the clinical outcomes: total PANSS, changes in body weight, AE, adherence, hospitalization, re-hospitalization and relapses. The factors for costs were: specific pharmacological therapy, outpatient consultations for treatment, basal hospitalization, re-hospitalization, length of hospital stay and absence from work. The decision tree was validated by a panel of experts. **RESULTS:** Risperidone LA was the alternative with the lowest cost for annual treatment (\$84,877 pesos). Differences versus the other treatment therapies were found in regards to hospitalization, subsequent hospitalizations and, to a lesser degree, absenteeism from work. Treatment with LARI produced savings of \$8324 pesos compared to Haloperidol Depot (the most widely used injected antipsychotic in Mexico); compared to the second generation antipsychotics (atypical), savings were \$27,733 pesos versus Olanzapine and \$1875 pesos versus oral Risperidone. LARI produced the lowest number of re-hospitalized patients and events requiring re-hospitalization as well as superior clinical improvements compared to the other therapies. **CONCLUSION:** The study demonstrated that LARI is a cost-efficient and dominant alternative for the treatment of schizophrenia patients in Mexico.

PMH11

MEDICATION USE PATTERNS AND COSTS ASSOCIATED WITH ATYPICAL ANTIPSYCHOTICS IN THE TREATMENT OF BIPOLAR DISORDER

Zhu B, Kulkarni P, Stensland M, Ascher-Svanum H

Eli Lilly and Company, Indianapolis, IN, USA

OBJECTIVES: The objective of this study was to determine the medication use patterns and costs associated with atypical antipsychotics in the treatment of bipolar disorder. **METHODS:** Data for this retrospective study were obtained from private payer administrative claims. Bipolar patients were identified based on one inpatient or two outpatient diagnoses of bipolar disorder. Those who initiated on olanzapine, risperidone, quetiapine, or ziprasidone during 2003, had not used the initiated medication during the prior three-months, and met eligibility criteria in prior six-months and post one-year were included. **RESULTS:** Among the 1516 bipolar patients in this study, olanzapine (N = 507) was more likely to be initiated as the primary bipolar medication (50.9%) than risperidone (39.9%, N = 424), quetiapine (36.1%, N = 463) or ziprasidone (25.4%, N = 122). During the post one-year, olanzapine was used as the only primary bipolar medication for more days (73.5) than risperidone (53.7), quetiapine (56.3), and ziprasidone (36.6). Overall, olanzapine and risperidone initiated patients incurred lower total annual costs (\$15,208 & \$14,216 respectively) than quetiapine (\$18,087) and ziprasidone (\$18,729) initiated patients. **CONCLUSION:** Among the atypical antipsychotics studied, olanzapine was used more often as a primary bipolar medication while quetiapine and ziprasidone were used more in conjunction with other bipolar medication for bipolar disorder.

PMH12

DEPRESSED INDIVIDUALS WITH MUSCULOSKELETAL CHRONIC PAIN AND HEADACHE SHOW HIGHER HEALTH CARE UTILIZATION AND COSTS

Iyer RG, Fensterheim LE, Berger JE, Dodds MM, Weston NK

Caremark Inc, Northbrook, IL, USA

OBJECTIVES: To compare resource utilization in depressed patients with and without co-morbid musculoskeletal chronic pain (MSCP) and headache. **METHODS:** Caremark administrative pharmacy and medical claims data were analyzed in this study over a one-year period. ICD9 CM codes were used to identify participants with depression, MSCP and headache. Outcomes included number of visits and expenditures associated with office visits (MD), emergency room visits (ER), hospitalizations (HOS) using medical claims data, and prescription costs (Rx) using pharmacy claims data. Logistic regression was used to identify the demographic predictors of co-morbid MSCP and headache in patients with depression. Analysis of covariance was used to determine differences in health care use and expenditures, adjusting for age, sex, and marital status. **RESULTS:** One-year prevalence of MSCP and headache in depressed patients was 18%. Women with depression were 1.7 times more likely to have MSCP or headache than men with depression ($p < 0.0001$). After adjusting for age, sex and marital status, depressed patients with MSCP and headache had significantly more ER visits per year (2.5 vs. 1.6, $p < 0.0001$) and physician visits per year (10.0 vs. 7.0, $P < 0.0001$). Annual ER, MD and Rx expenditures were significantly higher in the depression group with co-morbid MSCP and headache (ER: \$2008 vs. \$1635, $p < 0.0001$ and MD: \$559 vs. \$412, $p < 0.00001$ and Rx: \$3926 vs. \$3111, $p < 0.0001$). **CONCLUSION:** Depressed patients with co-morbid MSCP and headache utilize more health care resources and incur higher health care expenditures. Treating depression and pain in combination could improve financial and clinical outcomes.